



Forest Health Protection

Pacific Southwest Region

Northeastern California Shared Service Area

Date: July 20, 2016

File Code: 3420

To: District Ranger, Almanor Ranger District, Lassen National Forest

Subject: Hazard Trees at Butte Meadows Work Center (FHP Report NE16-8)

On June 9, 2016, Bill Woodruff, Forest Health Protection (FHP) Plant Pathologist, with District personnel Tammy Alexander, Matt Waterson, Theresa Voboril and Jess Coakley, examined large conifers growing near barracks and other buildings at Butte Meadows Work Center. Several of the largest trees have serious defects and high-value targets which make them hazardous. The crowns of most of the dominant conifers on the site are open-grown which makes them more susceptible to failure during high wind events because their tops are exposed to the full force of the wind. (Figures 1a and b)



Figure 1a. Dominant conifers near buildings at Butte Meadows Work Center are more susceptible to failure during high wind events because they are open grown; the tall trees are 40" to 70" DBH; 3 Doug-firs ("A, B and C") had root disease conks on them; all could strike building(s) if they blow down.

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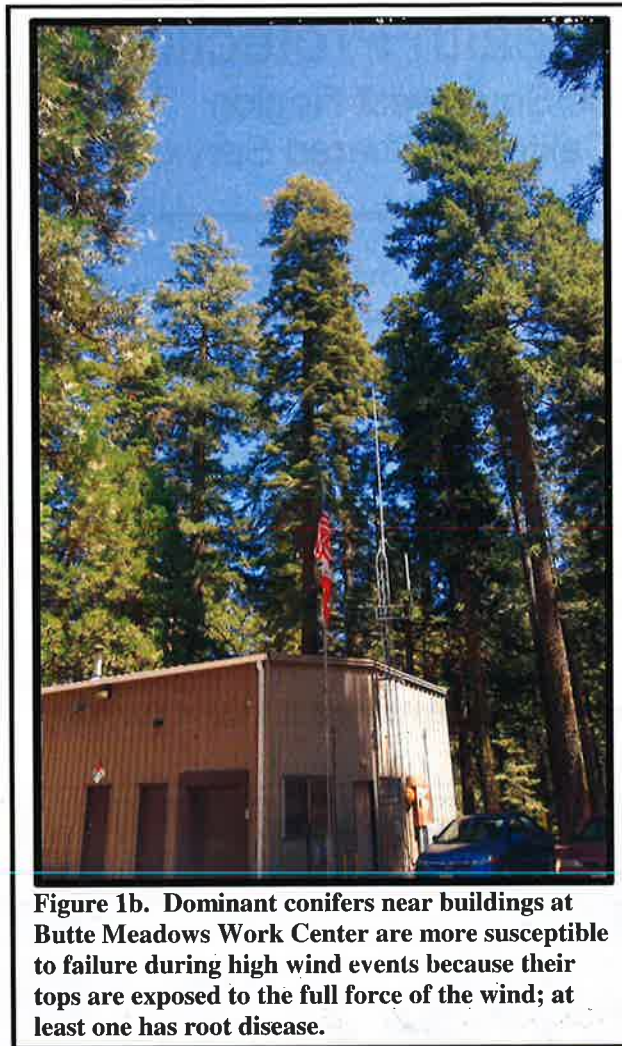


Figure 1b. Dominant conifers near buildings at Butte Meadows Work Center are more susceptible to failure during high wind events because their tops are exposed to the full force of the wind; at least one has root disease.

growing well within striking distance of several buildings or the parking area (Figure 2). All the conifers of concern had DBHs between 40" and 70"+; and heights mostly above 120 feet.

Two of the Doug-fir trees (70"+ and 50"+ DBH) with *P. schweinitzii* conks on their bases standing less than twelve feet from the CalFire barracks have slightly swollen bases which indicates that decay may be weakening the wood in their butts. A fifth large Doug-fir located about 30 feet east of the CalFire barracks had numerous woodpecker holes and obvious carpenter ant activity near its base with lots of boring dust present on the ground and in bark crevices. This Doug-fir may also have *P. schweinitzii* root disease but any conks that would have confirmed the existence of this disease would have been removed by the thorough raking around this tree which would have removed any conks growing on this tree. However the carpenter ant activity in this tree which deposited a large amount of boring dust on the bark and ground has

Root disease caused by the fungus *Phaeolus schweinitzii* is present in at least four large Doug-fir trees; confirmed by the presence of fungal fruiting bodies (conks) found on the bases of three of the tall Doug-fir trees, all of which could strike any of two or three buildings, the parking area, or places where people linger, depending on which direction they fell in the event of a failure. Several *P. schweinitzii* conks were also found growing from the roots of a fourth tall Doug-fir, also

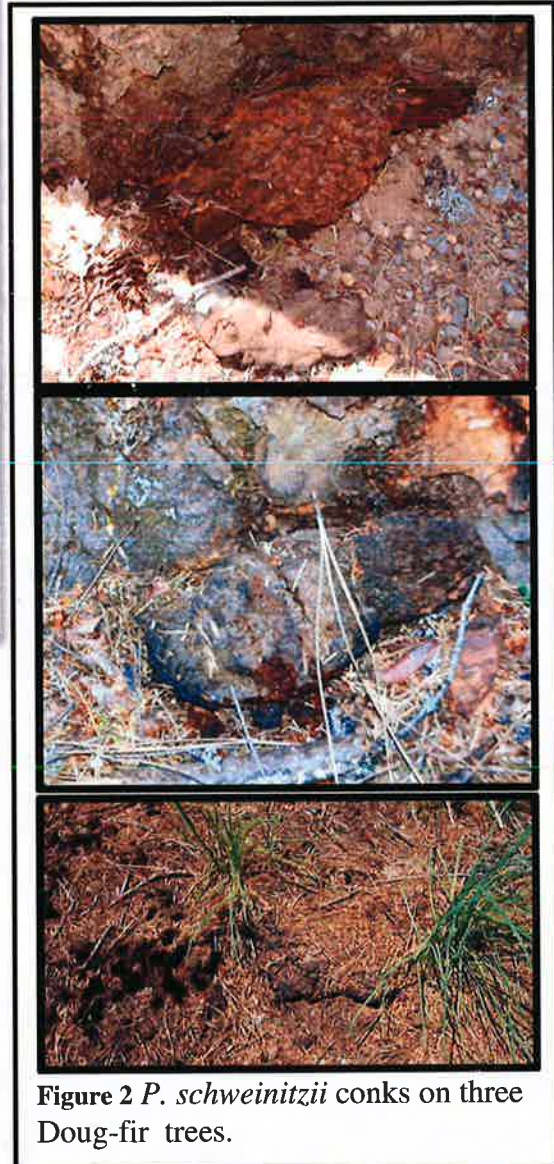


Figure 2 *P. schweinitzii* conks on three Doug-fir trees.

probably weakened this tall Doug-fir to the point where it now threatens nearby buildings. In addition to signs of root disease and carpenter ant activity, three of the tall Doug-firs near the CalFire barracks have declining crowns indicated by the presence of thinning foliage and/or dead branches (Figures 3 and 4). One of these Doug-firs growing 20 feet from the SW corner of the CalFire barracks (Figure 4) has an attached stump which could have provided an entry court for



Figure 3 Tall Doug-fir trees near the CalFire barracks with declining crowns. Trees in the left picture are located less than 12 feet from the barracks and are infected with *P. schweinitzii* root disease. The tree in the right picture is the one with obvious carpenter ant activity in its butt. These

decay fungi to enter into its bole. Numerous drilling into these trees failed to find sapwood decay. Failure to find decay is not proof that serious decay is not present. *P. schweinitzii* usually causes heart rot in the butt and root wood of host Doug-firs; in places the drill cannot reach. (See attached discussion of *P. schweinitzii*)

Several other defective tall conifers were identified (Figure 5). A large snag, a tall Doug-fir a few feet away from the NW corner of the building east of the CalFire barracks with a lightning scar and a very large white fir with several



Figure 4. Tall Douglas-fir 20 feet from the SW corner of the CalFire barracks with *P. schweinitzii* root disease, an old attached Douglas-fir stump, and a declining crown

large dead branches near the middle of its crown. Although no fungal fruiting body could be found growing on this white fir, the dead branches may be an indicator of serious decay in the wood behind the branches. Decay, if present, could both weaken the attachment of the dead branches and compromise the strength of the bole. A large dead branch could become a deadly projectile if it breaks from the bole and the upper crown could become deadly should the bole snap off at the dead branches.



Figure 5 Tall Doug-fir with lightning scar (l), tall snag (m) and large dead branches in tall white fir (r) (indicated by the arrows).

Although the carpenter ant infested Doug-fir just east of the CalFire barracks is one that appeared to be most likely to fail, any defective tree places personnel and structures at risk. It is impossible to know the extent of decay in the root and bole wood of the trees discussed in this paper. Any decay will only worsen over time and increase the potential of tree failure. And any violent wind storm will increase the likelihood of these trees failing. Personnel need to take appropriate safety measures during high wind events.

The District personnel are to be commended for their wise use of the Region 5 Hazard Tree Guidelines in identifying tree hazards at the Butte Meadows Work Center.

If you have any questions regarding this report and/or need additional information please contact Bill Woodruff at 530-252-6680.

/s/ Bill Woodruff

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Attachment:

Red-Brown Butt Rot

The mushroom-like fruiting bodies of *Phaeoelus schweinitzii* are the most reliable signs of infection. They are produced annually on the ground near the bases of infected trees. Occasionally, they occur on the stem, usually within 3 1/3m (10 ft) of the ground. They are velvety in texture and reddish, greenish, or yellow-brown with yellow margins. As they age, they become dark brown, brittle and resemble cow-pies. Early decay is light green to light brown and firm. In advanced stages, the decay is light brown and cubical, aging to dark brown with resinous white mycelial sheets in the shrinkage cracks.

Most frequently found on older Douglas-fir. Less frequently affected hosts include spruces, and Jeffrey, ponderosa, western white, and sugar pine. The fungus is found only rarely on western redcedar, hemlocks, and true firs.

P. schweinitzii causes severe root and butt decay of older trees. Wind breakage above the groundline is more common than windthrow. Trees are seldom killed as a result of root decay alone, but this does sometimes happen. Douglas-fir beetles and *Armillaria* spp. often attack *P. schweinitzii*-infected trees. Decay is confined to the heartwood and is usually found in the roots and butts of the host within ten ft (3 1/3 m) of the ground.

However, decay may occasionally extend as much as 30 ft (10 m) up the trunk in trees greater than 150 years of age. Infected trees may have pronounced butt swells or "jug butts". In very advanced cases, the heartwood may disintegrate completely, leaving a hollow butt. Trees in this condition often fail during high winds, leaving characteristic

The fruiting bodies are produced in summer and fall, and may persist for a year or more. They tend to be more abundant on moist sites. Fruiting bodies near the bases of trees indicate that the roots are infected but do not necessarily indicate that extensive butt rot is present. Windborne spores colonize trees through root wounds and fire scars. Tree to tree spread also takes place across root contacts and grafts. The relative importance of these two different modes of infection varies by locality. Trees of any age may become infected.

